

## Engineering is Out of This World!

**Acoustical Engineering** 

NASA is developing a new rocket called the Space Launch System, or SLS. The SLS will be able to carry astronauts and materials, known as payloads. Acoustical engineers are helping to build the SLS.

Sound is a vibration. A vibration is a rapid motion of an object back and forth.

Hold a piece of paper up right in front of your lips. Talk or sing into the paper.

What do you feel?\_\_\_\_\_

What do you think is causing the vibration?



If too much noise, or acoustical loading, is caused by air passing over the SLS rocket, the vehicle could be damaged by the vibration!





## Typical Sound Levels in Decibels (dB) 130 - Jet takeoff 120 — Pain threshold 110 — Car horn 100 - Motorcycle 90 - Power lawn mower 80 — Vacuum cleaner 70 - Street traffic -Working area on ISS (65 db) 60 — Normal conversation 50 - Rain 40 — Library noise 30 — Purring cat 20 — Rustling leaves 10 — Breathing 0 — Hearing Threshold Hearing protection is recommended at 85 decibels.

(Continued from front)

Experiment with the paper.

Does talking louder or softer change the vibration?

Is the vibration affected by the pitch of your voice? (Hint: Pitch is how deep or high the sound is.)

Change the angle of the paper. What happens?

Why do you think NASA hires acoustical engineers? (Hint: Think about how loud rockets are!)

How do you think the noise on an airplane compares to the noise on a rocket?

NASA is currently researching ways to reduce the noise made by airplanes.

In what ways does an airplane make noise? (If you haven't flown, think of riding in your family car or standing on a busy street corner.)